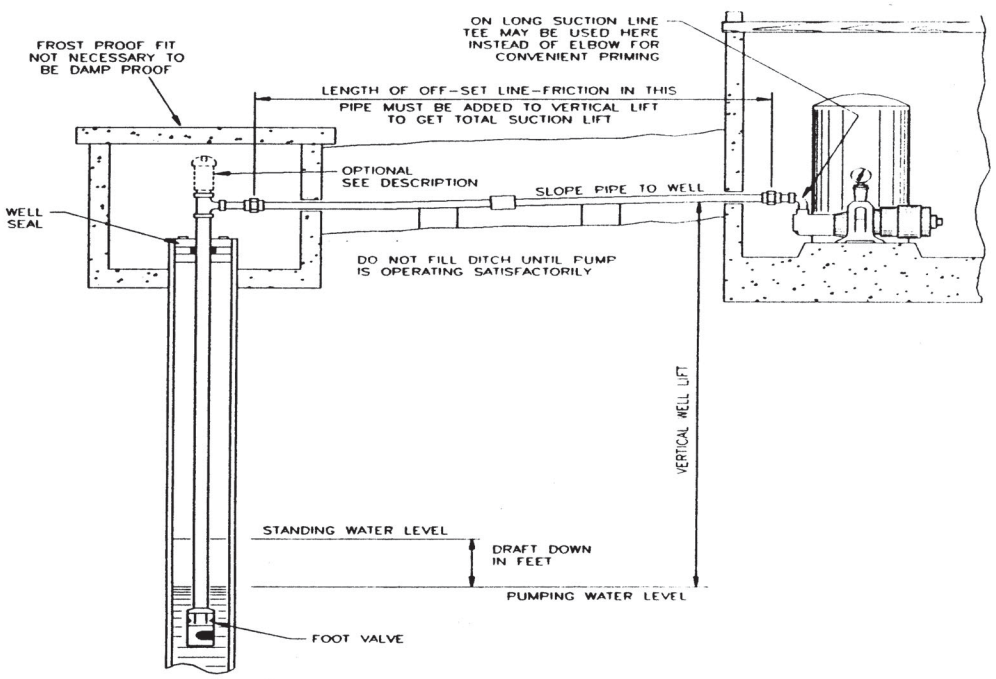
NATIONAL PUMP COMPANY, LLC

Betta FLO

JET PUMP

INSTALLATION MANUAL


ON LONG SUCTION LINE TEE MAY BE USED HERE INSTEAD OF ELBOW FOR CONVENIENT PRIMING
FROST PROOF FIT NOT NECESSARY TO BE DAMP PROOF
LENGTH OF OFF-SET LINE-FRICTION IN THIS PIPE MUST BE ADDED TO VERTICAL LIFT TO GET TOTAL SUCTION LIFT
OPTIONAL SEE DESCRIPTION
SLOPE PIPE TO WELL
WELL SEAL
DO NOT FILL DITCH UNTIL PUMP IS OPERATING SATISFACTORILY
VERTICAL WELL LIFT
STANDING WATER LEVEL
DRAFT DOWN IN FEET
PUMPING WATER LEVEL
FOOT VALVE

SHALLOW WELL JET PUMPS

STEP 1 Make sure the well is pumped clean and that sand and grit are absent.

STEP 2 Before installing a shallow well or centrifugal pump make sure the total suction lift does not exceed 25 feet.

STEP 3 For convertible jet pumps attach the ejector to the pump housing, making sure that the 1 1/4" and 1" tapped holes in the ejector match up with the 1 1/4" and 1" tapped holes in the pump housing.

STEP 4 Install a 1 1/4" foot valve on the bottom of the suction pipe, on driven wells, where the well casing is used as suction pipe, install a 1 1/4" horizonal line check valve.

STEP 5 Install a sanitary well seal onto the top of the 1 1/4" suction pipe to fit well diameter. Use 1 1/4" tee and a 1 1/4" plug at the top of the well seal to support suction pipe in the well. Install 1 1/4" union between well and 1" pressure pipe that will rest on the well seal to support the pipes and ejector or jet in well. A 1 1/4" tee or elbow can be used on the top of the 1 1/4" suction pipe which needs to be slightly higher than the 1" pressure pipe to make the connection to the pump housing. Install a compression coupling on both suction & pressure pipes staggering them apart from each other. Install 1 1/4" pipe into the 1 1/4" tap in the pump housing. Install 1" pipe in to the 1" tap in the pump housing. Join together with

SHALLOW WELL JET PUMPS CONT.

two unions between the pump and the well. If vertical pump is being used, adapt the 1 1/4" and 1" pipes directly into the 1 1/4" and 1" taps in the pump housing and adapt some type of supports or legs from the foundation to brackets on the pump housing to support the weight of the pipes, ejector or jet in the well.

STEP 6 Prime pump by pouring water into the discharge of the pump housing or automatic regulator that is mounted on the discharge of pump.

STEP 7 Make sure pump is off! Check motor decal and make sure motor is wired for voltage being used. Make your wire connections in the pressure switch.

STEP 8 Adjust regulator to maximum pressure, and start the pump. When pressure builds up on the pressure guage, start opening regulator slowly. The pump will start discharging water and the pressure will decrease. Continue to slowly open up regulator until pump starts to charge tones or pump starts to lose prime. At this point determine what your operating pressure is by the reading on the pressure guage. Adjust regulator back up about 5 pounds above this tone or prime loss pressure. Put a jam nut on regulator to secure adjustment.

STEP 9 Make connection on the discharge of pump to the water tank. This connection can be made with galvanized or pvc pipe.

DEEP WELL JET PUMP DOUBLE PIPE

STEP 1 Make sure the well is pumped clean and that sand and grit are absent.

STEP 2 Deep well pumps are always installed with the ejector or jet attached to the bottom of the suction and pressure pipe in the well. A foot valve must be used if the ejector does not have a built in check valve. A tail pipe may be used beneath the ejector with the foot valve at the bottom of the tail pipe.

STEP 3 Connect foot valve to bottom of jet with 1 1/4" galvanized nipple or full length of 1 1/4" galvanized pipe. Connect 1 1/4" galvanized pipe to 1 1/4" tap in ejector or jet body. Connect 1" pipe to the 1" tap in ejector or jet body. Keep adding pipes until you reach the desired depth. As each pipe is added fill each with water after lowering in well.

STEP 4 Install a double pipe sanitary well seal at the top of the well to keep out contamination and to support the pipe and ejector or jet in well.

STEP 5 Use 1" galvanized elbow on top of pump. Connect suction pipe into tapped hole in housing or ejector. Pump needs to be installed at an uphill slope from the well with no dips or low spots to eliminate the possibility of air pockets. Pump needs to be mounted onto the foundation for smoother and quieter operation and prolonged motor life.

STEP 6 Prime the pump! Be sure the suction pipe and pump housing are full of water with no trapped air pocket in suction line.

STEP 7 Make sure power is off! Check motor decal and make sure motor is wired for voltage being used. Connect power voltage wire to terminals marked line voltage in pressure switch. Connect ground wire to ground terminal on pressure switch.

STEP 8 Start pump! If pressure does not build after a reasonable time, stop the pump. Reprime and start again. Allow pump to operate briefly to purge air from the system. This procedure may have to be repeated until pump builds up pressure.

STEP 9 Make connection on discharge of pump to water tank. This connection can be made with galvanized or pvc pipe.

DEEP WELL JET PUMP SINGLE PIPE

STEP 1 Make sure the well is pumped clean and that sand and grit are absent.

STEP 2 Deep well pumps are always installed with the ejectors or jet attached to the bottom of the suction pipe in the well. A foot valve must be used if the ejector or jet does not have a built in check valve. A tail pipe may be used beneath the ejector or jet with the foot valve mounted on the bottom of the tail pipe.

STEP 3 Install foot valve to the bottom of the jet or on the bottom of the tail pipe, if the tail pipe is being used. Stretch leather cup washer to open up leathers for a better seal in the well casing. Connect the ejector or jet to 1 1/4" pipe and lower into the well. Keep adding pipes and lowering the ejector or jet into the well to the desired depth. Fill suction pipe with water as it is lowered into the well. Fill the well casing with water as each suction pipe is added.

STEP 4 Install casing adapter onto 1 1/4" suction pipe, lossen the three flange bolts on the adapter and lower adapter onto the well casing, being careful not to damage the rubber gasket. Make sure the well adapter is all the way around. Tighten the three bolts, each evenly until tight. Fill the well adapter with water making sure both the 1" and 1 1/4" holes are full of water.

STEP 5 Mount the pump onto the well adapter with gaskets and bolts, making sure that the 1 1/4" and 1" holes in pump line up with the holes in the adapter.

STEP 6 Prime the pump by pouring water into the discharge of the pump housing or automatic regulator mounted in discharge of the pump on some models.

STEP 7 Make sure the power is off! Check motor decal and make sure the motor is wired for the voltage being used. Make your wire connections in the pressure switch.

STEP 8 Adjust the regulator to maximum pressure, start the pump when the pressure builds up on the pressure guage start opening the regulator slowly. The pump will start discharging water and the pressure will start decreasing as the discharge flow increases. Continue to slowly open up the regulator until pump starts to change tones or pump starts to loose its prime. At this point determine what your operating pressure is by reading the pressure guage. Adjust the regulator back up about 5 pounds above this tone or prime lost pressure. Use a jam nut on regulator to secure this adjustment.

STEP 9 Make connection on discharge of pump to water tank. This connection can be made with galvanized or pvc pipe.

TROUBLE SHOOTING

A. PUMP WON'T RUN

CAUSE OF TROUBLE	HOW TO CHECK	HOW TO CORRECT
1. Blown fuse.	Check to see if fuse is ok	If blown, replace with fuse of proper size.
2. Low in voltage	Use voltmeter to check pressure switch or terminals nearest pump	If voltage is under recommended minimum, check the size of wiring from main switch on property. If ok, contact power company.
3. Loose, broken or incorrect wiring.	Check wiring circuit against diagram. See that all connections are tight and that no short circuits exist because of worn insulation, crossed wire, etc.	Rewire any incorrect circuits. Tighten connections, replace defective wires.
4. Defective Motor	Check to see that switch is closed	Repair or take to motor shop.
5. Defective pressure switch	Check switch setting. Examine switch contacts for dirt or excessive wear.	Adjust switch settings. Clean contacts with emory cloth if dirty.
6. Tubing to pressure switch clogged	Remove tubing and blow through it.	Clean and replace if plugged.

TROUBLE SHOOTING CONT.

A. PUMP WON'T RUN CONT..

CAUSE OF TROUBLE	HOW TO CHECK	HOW TO CORRECT
7. Impeller or seal	Turn off power, then use screwdriver to turn impeller or motor.	If impeller won't turn, remove turn housing and locate source of binding.
8. Defective start capacitor	Use an omhmmeter to check resistance across capacitor. Needle should jump when contact is made. No movement means an open capacitor, no resistance means capacitor is shorted.	Replace capacitor or take motor to a service station.
9. Motor shorted out	If fuse blows when pump is started (and external wiring is ok) motor is shorted.	Replace Motor

B. MOTOR OVERHEATS AND OVERLOAD TRIPS OUT

1. Incorrect line voltage	Use voltmeter to check at pressure switch or terminals nearest pump	If voltage under recommended minimum, check size of wiring from main switch on property. If ok, contact power company.
2. Motor wired incorrectly	Check motor wiring diagram	Reconnect for proper voltage as per wiring diagram.
3. inadequate ventilation	Check air temperature where pump is located. Iif over 100 degrees F overload may be tripped out on external head	Provide adequate ventilation or move pump.
4. Prolonged low pressure delivery	Continuous operation at very low pressure places heavy overload on pump. This can cause overload protection to trip.	Install globe valve on dicharge line and throttle to increase pressure

C. PUMP STARTS AND STOPS TOO OFTEN

1. Leak in the pressure tank	Apply soapy water to entire surface above water line. If bubbles appear, air is leaking from the tank.	Repair leaks or repair tank.
2. Defective air volume control	This will lead to a waterlogged tank. Make sure control is operating properly. If not, remove and examine for plugging.	Adjust switch settings. Clean with emory cloth if dirty.
3. Leak on discharge side of system	Make sure all fixtures in plumbing system are shut off. Then check all units (especially ballcocks) for leaks. Listen for noise of water running.	Repair leaks as necessary.
4. Leak on suction side of system	On shallow well units, install pressure guage on suction side. On deep well systems, attach a pressure guage to the pump. Close the discharge line valve. Then using a bicycle pump or air compressor, apply about 30 psi pressure to the system. If the system will not hold this pressure when the compressor is shut off, there is a leak on the suction side.	Make sure above ground connections are tight. Repeat test. If necessary, pull piping and repair leaks.
5. Leak in foot valve.	Pull piping and examine foot valve	Repair or replace defective valve

TROUBLE SHOOTING CONT.

D- PUMP WON'T SHUT OFF

CAUSE OF TROUBLE	HOW TO CHECK	HOW TO CORRECT
1. Wrong pressure switch setting or setting drift.	Lower switch setting. If pump shuts off this was the trouble.	Adjust switch to the proper setting.
2. Defective pressure switch	Arcing may have caused switch contacts to "weld" together in closed position. Examine points and other parts of switch for defects.	Replace switch if defective.
3. Tubing to pressure switch clogged	Remove tubing and blow through it.	Clean and replace if plugged.
4. Loss of prime	When no water is delivered check prime of pump and well piping.	Reprime if necessary
5. Low well level	Check well depth against pump performance table to make sure pump and ejector are properly sized.	If undersized, replace pump or ejector.
6. Plugged ejector	Remove ejector and inspect	Clean and reinstall if dirty

E - PUMP OPERATES BUT DELIVERS LITTLE OR NO WATER

1. Low line voltage	Use voltmeter to check at pressure switch or terminals nearest the pump.	If voltage under recommended minimum, check size to see if wiring from main switch on property. If ok contact power company.
2. System incompletely primed	When no water is delivered, check prime of pump and well piping.	Reprime if necessary.
3. Air lock in suction line.	Check horizontal piping between well and pump. If it does not pitch upward from the well to pump, an air lock may form.	Rearrange piping to eliminate air lock.
4. Undersized piping.	If system delivery is low, the discharge piping and/or plumbing lines may be undersized. Refigure friction loss.	
5. Leak in volume control or tubing	Disconnect air volume control tubing at pump and plug hole. If capacity increases, a leak exist in the tubing of control.	Tighten all fittings and replace control if necessary.
6. Pressure regulating wire stuck or incorrectly set. (Deep well only)	Check valve setting, inspect valve for defects.	Reset, clean, or replace valve as needed.
7. Leak on suction side of system	On shallow well units, install pressure guage on suction side. On deep well systems, attach a pressure guage to the pump. Close the discharge line valve. Then using a bicycle pump or air compressor apply about 30 psi pressure to the system. If the system will not hold this pressure when the compressor is shut off, there is a leak in the suction side.	Make sure above ground connections are tight. Repeat test if necessary, pull piping and repair leaks.
8. Low well level	Check well depth against pump performance table to make sure pump and ejector are sized correctly.	If undersized, replace pump or ejector.
9. Wrong pump-ejector combination.	Check pump and ejector models against manufacture's performance tables.	Replace ejector if wrong model is being used.

TROUBLE SHOOTING CONT.

E - PUMP OPERATES BUT DELIVERS LITTLE OR NO WATER CONT...

10. Low water level in well.	Shut off pump and allow well to recover. Restart pump and note whether delivery drops after continuos operation.	If well is “weak” lower ejector (deep well pumps) use a tall pipe, or switch from shallow well to deep well equipment.
11. Plugged ejector.	Remove ejector and inspect.	Clean, and reinstall if dirty.
12. Defective or plugged foot valve and/or strainer.	Pull foot valve and inspect. Partial clogging will reduce delivery. Complete clogging will result in no water flow. A defective foot valve may cause pump to loose its prime, resulting in no delivery.	Clean, repair or replace if needed.
13. Worn or defective pump parts or plugged impeller.	Low delivery may result from wear or impeller or other pump parts. Disassemble and inspect.	Replace worn parts on entire pump. Clean parts if required.